

ABSTRACT OF THE DISCLOSURE

A virtual wire assembly is disclosed. The assembly comprises a substantially electrically-nonconductive substrate; and a plurality of hermetic feedthroughs each comprising a conductive region extending transversely through the substrate to form a conductive pathway with accessible surfaces at opposing ends thereof, wherein each conductive pathway is electrically isolated from other conductive pathways. In certain embodiments of this aspect of the invention, the substantially electrically-nonconductive substrate is a semiconductor device, and the conductive regions each are comprised of an n-type or a p-type doped semiconductor material. Also disclosed are implanted medical devices requiring electronic or other components to be retained in a hermetic enclosure, such as cochlear and other sensory or neural prosthetic devices.